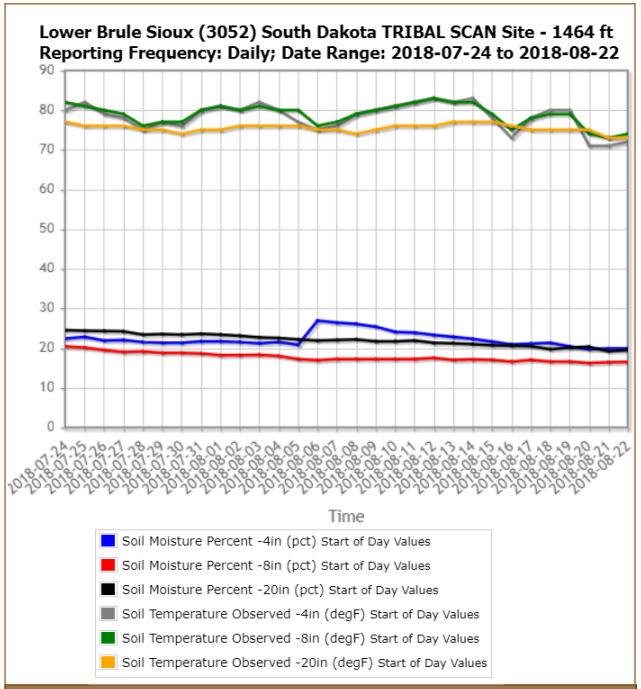

Soil moisture and soil temperature data for the Lower Brule Sioux Tribal SCAN site in South Dakota. Elevation at this site is 1464 ft.

Data transmission

Tribal SCAN uses a variety of methods to transmit remote station data. The majority of stations in the eastern U.S. use cellular modems for data transmission. Other forms of telemetry include meteor burst radio wave communications and satellite communications technology.

Data management

Tribal SCAN data management is performed in two stages. When the remote station data are received at the National Water and Climate Center's Water and Climate Information System (WCIS), the system automatically validates the incoming values against limits and flags any that fall outside preset limits.

A statistical assistant then examines any flagged values to determine their accuracy. All parameters are graphed and comparisons are made between sensors to verify that the data are within an acceptable range.

Data access

All Tribal SCAN data are available at the National Water and Climate Center website at www.wcc.nrcs.usda.gov/scan.

The website contains the current and historic data for each site. In addition to the data, each site contains all soil pedon information, a site photo, and a link to the National Soil Survey Laboratory database. This database contains all of the site characterization (chemical, physical, and mineralogical) information.

Contact us

Program Manager
Mike Wilson, National Soil Survey Center
100 Centennial Mall North
Lincoln, NE 68508
402-437-4134 mike.wilson@lin.usda.gov

Policy Information
Michael Strobel, Director, NWCC
1201 NE Lloyd Blvd, Suite 802
Portland, OR 97232
503-414-3055 michael.strobel@por.usda.gov

Technical Information
Deb Harms, Team Leader, Water and Climate Monitoring
1201 NE Lloyd Blvd, Suite 802
Portland, OR 97232
503-414-3050 deb.harms@por.usda.gov

Typical Tribal SCAN site, California

Tribal Soil Climate Analysis Network (Tribal SCAN)

National Water and Climate Center
Natural Resources Conservation Service

Lower Brule Sioux Tribal SCAN site, South Dakota.

Overview

The Natural Resources Conservation Service (NRCS) operates a soil moisture and climate information network on Tribal lands.

The Tribal Soil Climate Analysis Network, also known as Tribal SCAN, supports natural resource assessments and conservation activities through its network of automated climate monitoring and data collection sites.

Tribal SCAN focuses on agricultural areas which are situated on Tribal lands in the United States.

History

In the early 1990s, NRCS realized that its ability to make sound resource and drought assessments and watershed decisions was limited by a lack of quality, historic, and real-time soil climate information.

Existing data from other networks were limited, and tended to be application-specific, incomplete, short term, or narrow in coverage.

With this need in focus, NRCS started a pilot Soil Moisture/Soil Temperature project (known as SCAN) in 1991. Significant knowledge and experience about the type of sensors, required maintenance, network operation, quality control and data delivery was gained from the project. The Tribal SCAN network has evolved from this original pilot project.

How are Tribal SCAN data used?

Uses of long-term soil climate information are extensive, including:

- Monitoring drought development, triggering plans, and mitigation policies.
- Investigating and documenting climate change trends.
- Predicting the long-term sustainability of cropping systems and watershed health.
- Monitoring and predicting changes in crop, range and woodland productivity.
- Predicting regional shifts in irrigation water requirements.

Tribal members participate in the installation and maintenance of monitoring sites.

Standard site configuration

Parameter measured	Description
Soil moisture	Dielectric constant measuring device. Measurements are at 4”, 8”, and 20”
Soil temperature	Encapsulated thermistor. Measurements are at 4”, 8”, and 20”
Precipitation	Tipping bucket gage
Air temperature	Shielded thermistor
Relative humidity	Thin film capacitance-type sensor
Wind speed/direction	Propeller-type anemometer
Solar radiation	Pyranometer
Leaf wetness	Leaf wetness duration sensor (flat, printed circuit)

All sensor measurements are reported hourly.